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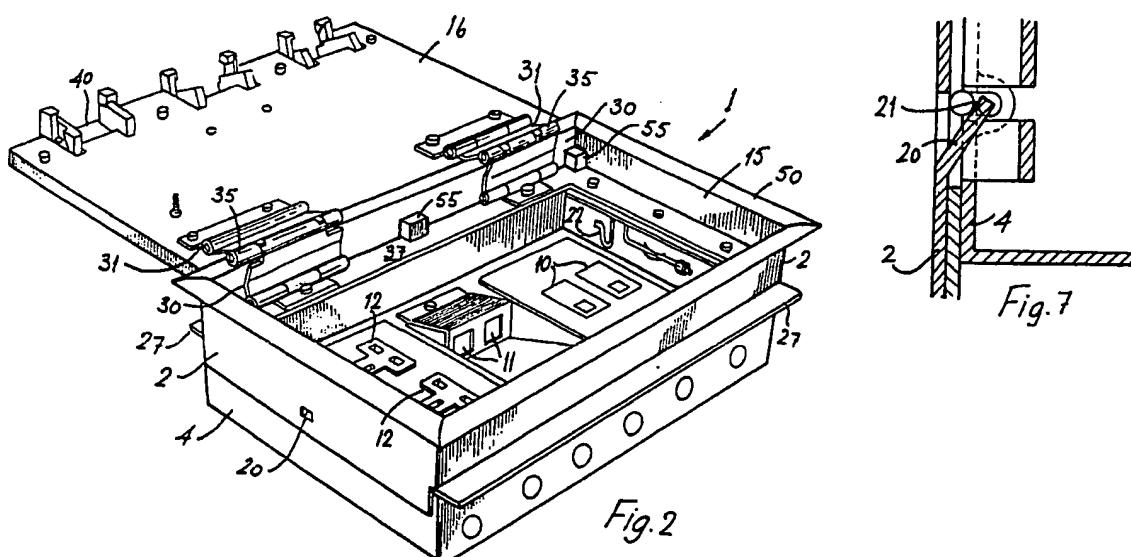
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(54) Floor box

(57) A floor box 1 comprises a collar 2 for mounting in an opening in a floor 3 and a lower housing 4 having knock-out inlet 5 for cables 6 and sockets 10, 11, 12. The box includes a door assembly comprising a door frame 15 and door 16 having cable outlets 40 through which cables connected to the sockets 10, 11, 12 are led. The lower housing 4 is releasably mounted to the collar 2 by means of a male lug part 20 and a female slot 21 defined by a rod 22 of spring material which is releasable from the lug part 20.



At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

This print takes account of replacement documents submitted after the date of filing to enable the application to comply with the formal requirements of the Patents Rules 1990.

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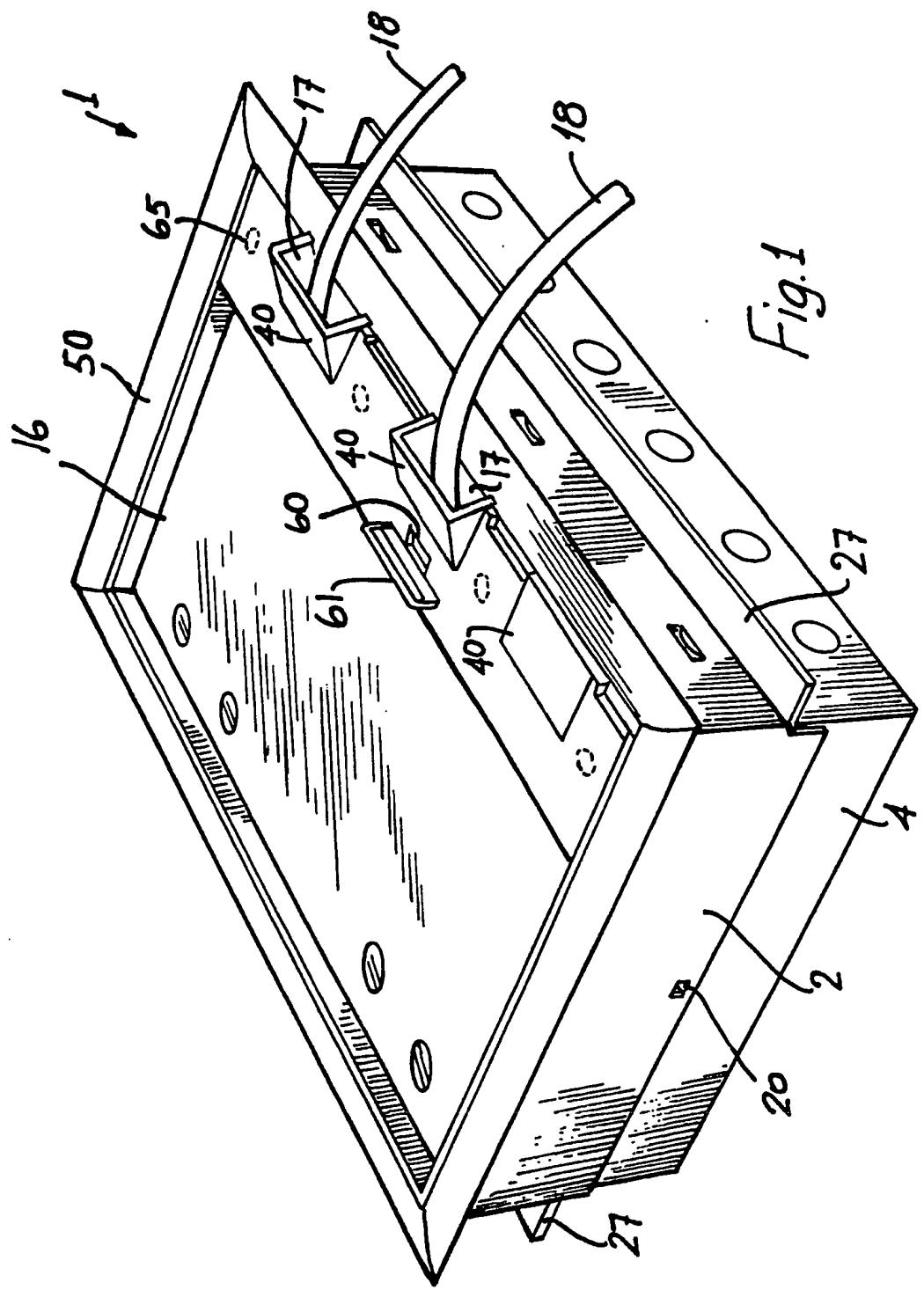


Fig. 1

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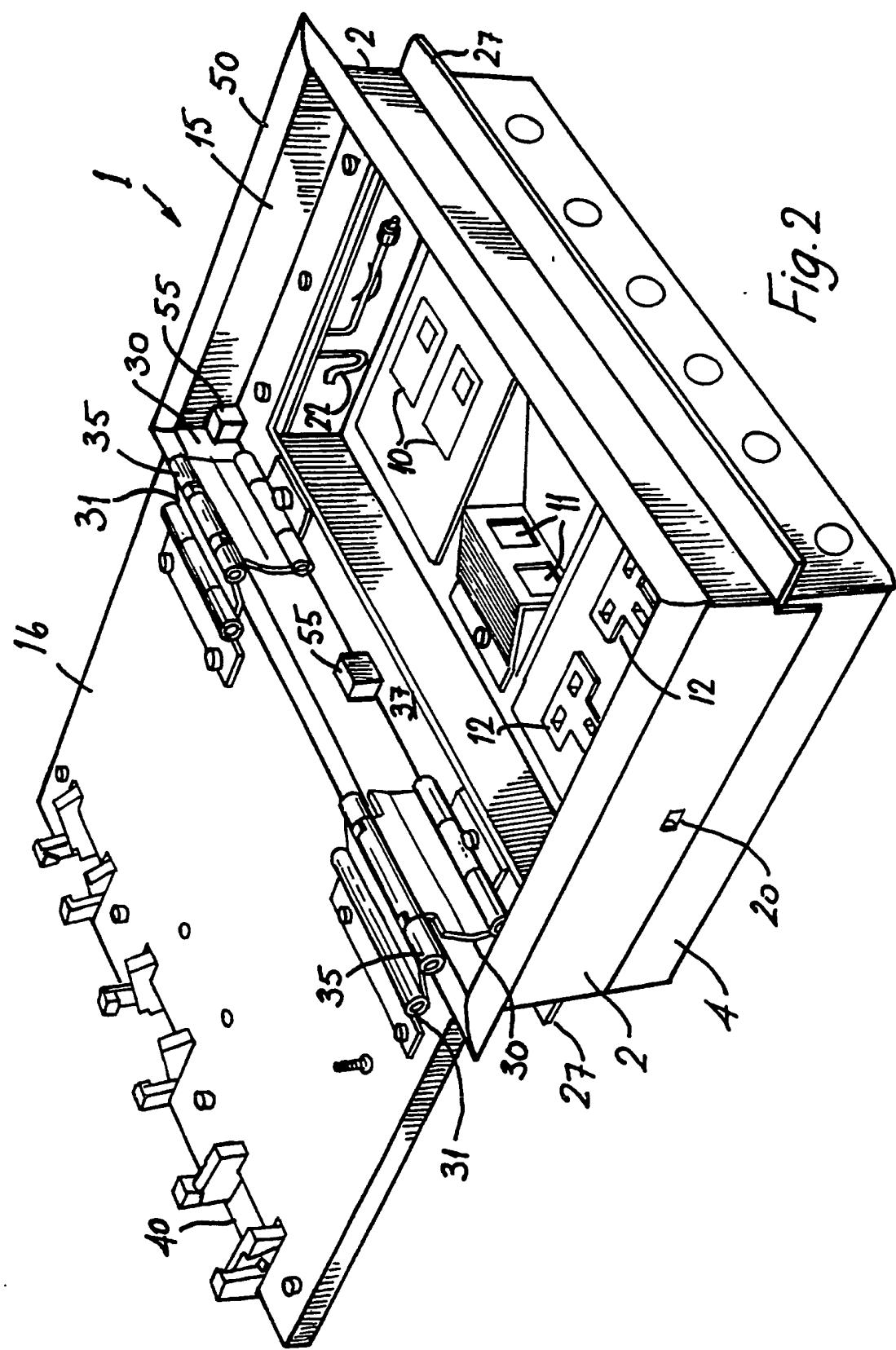
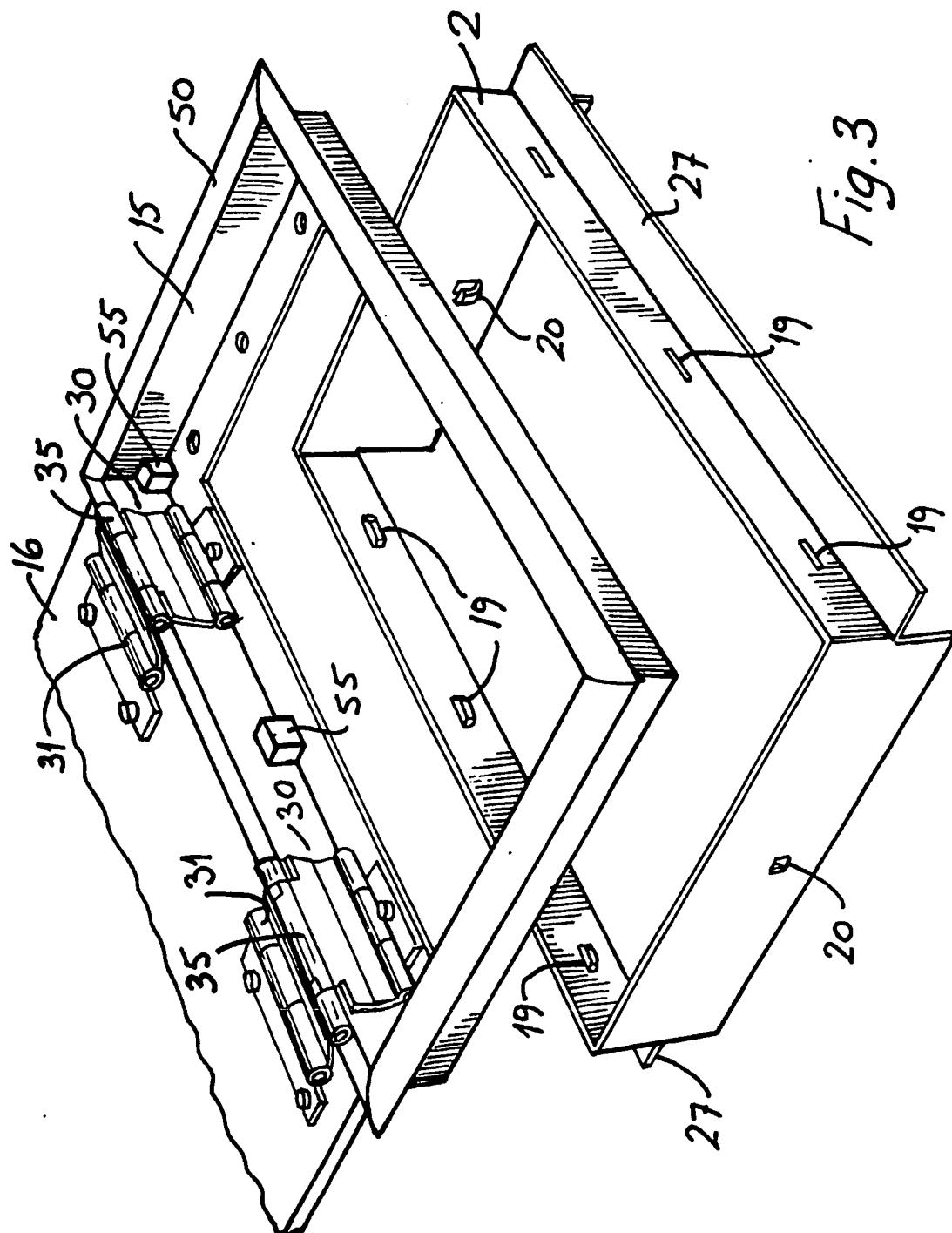
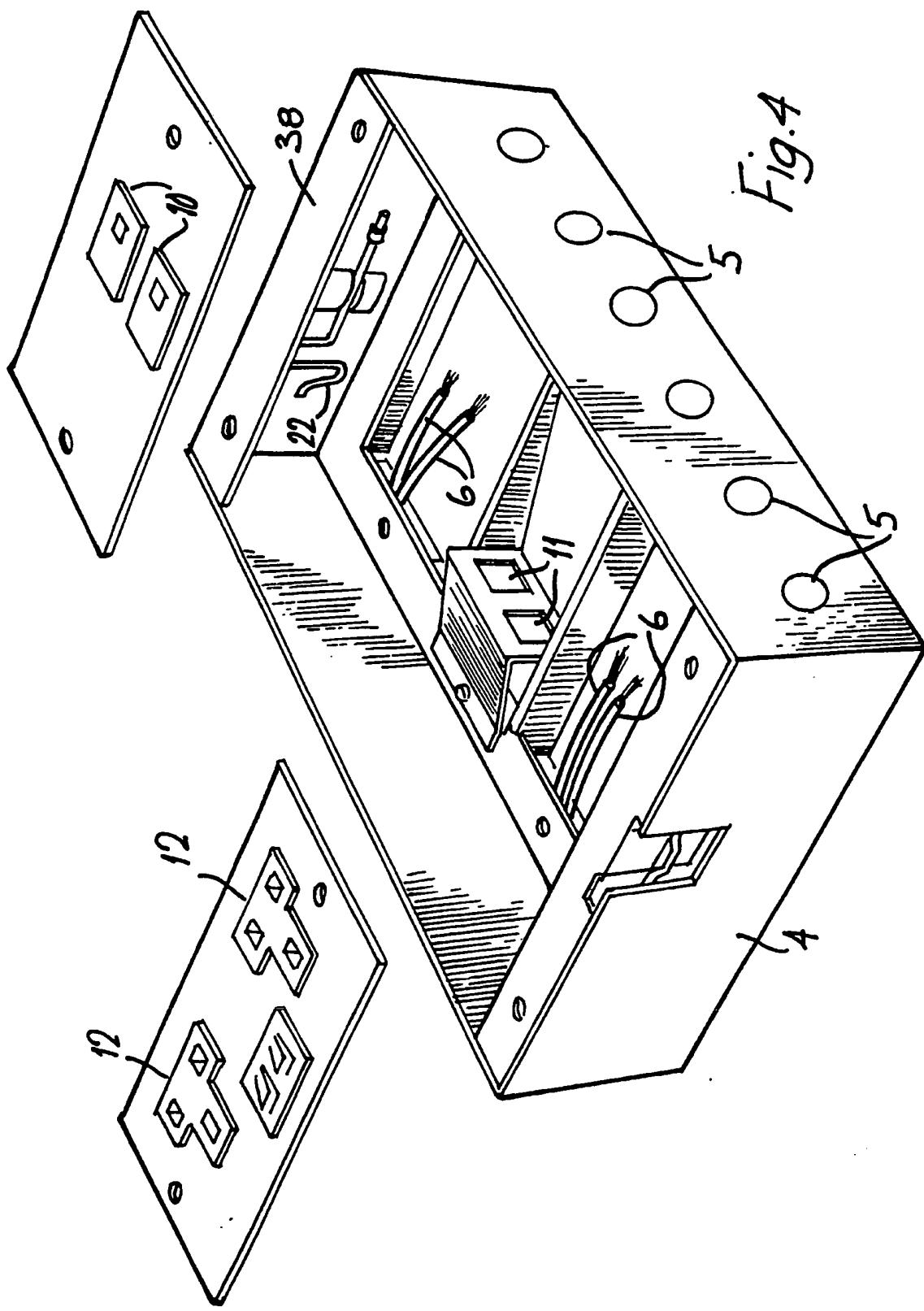


Fig. 2

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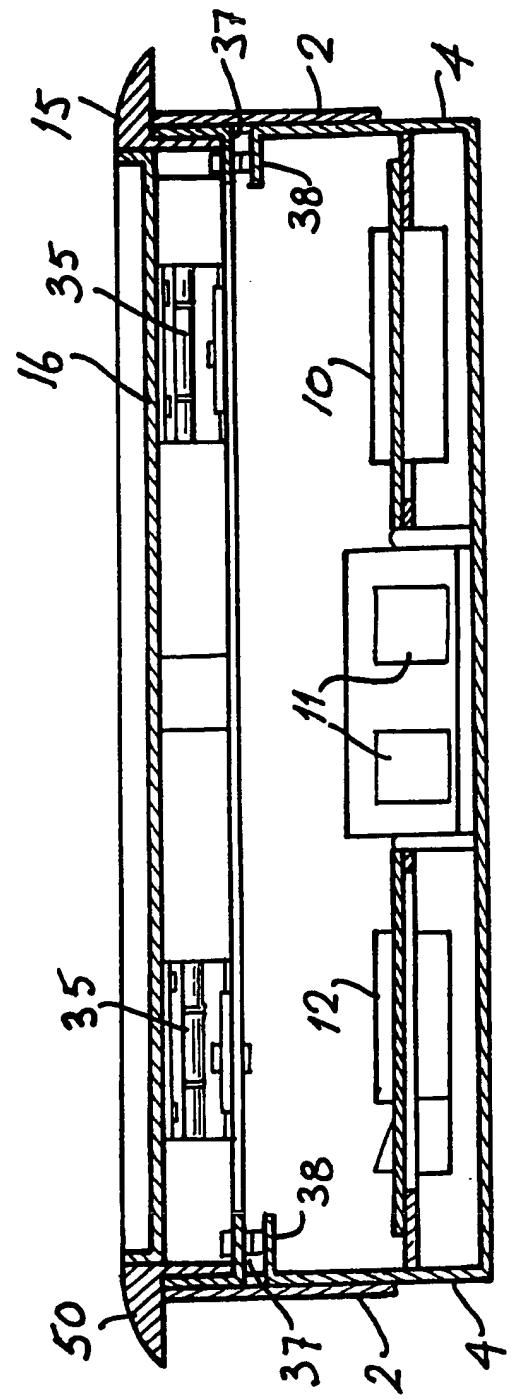
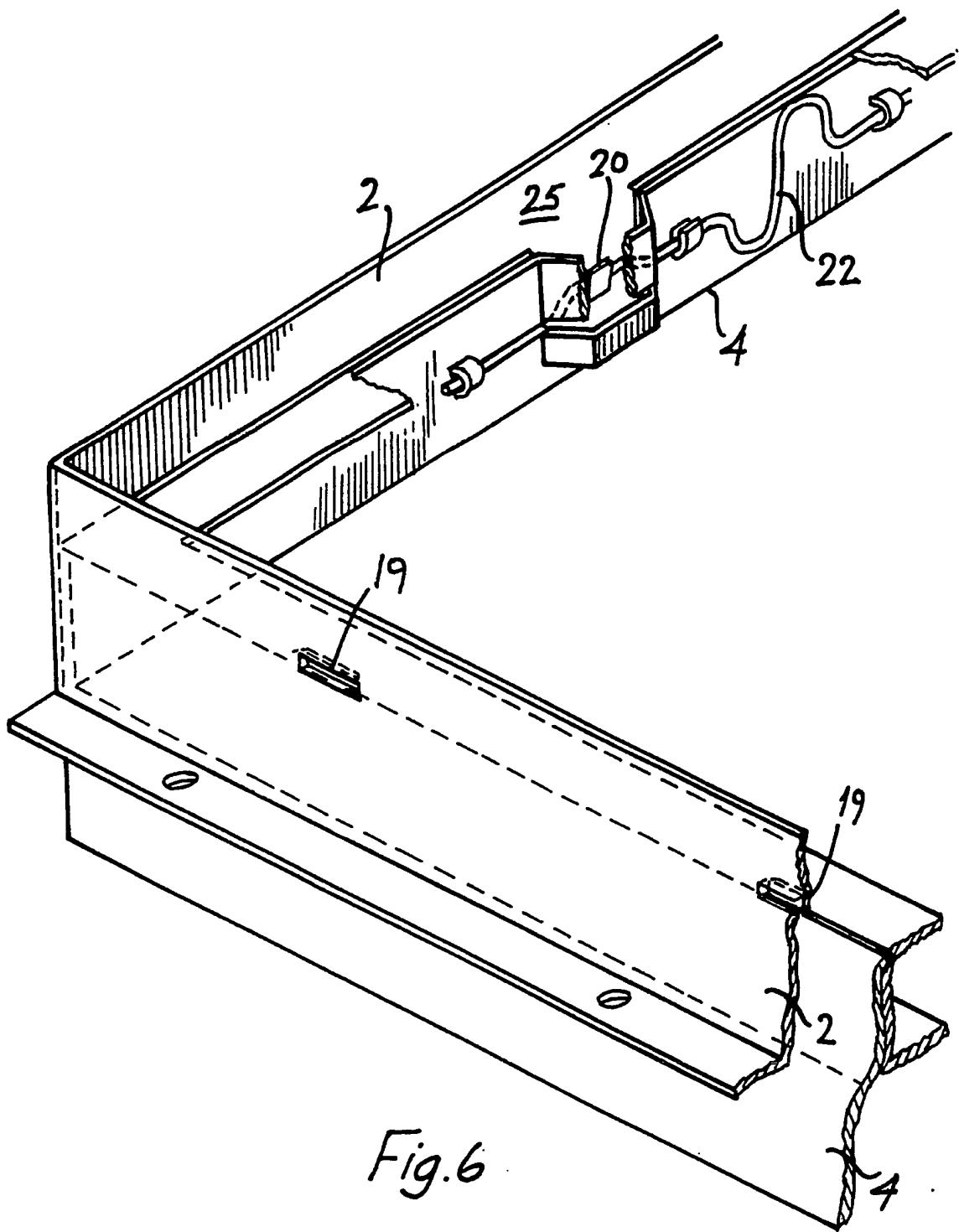


Fig. 5

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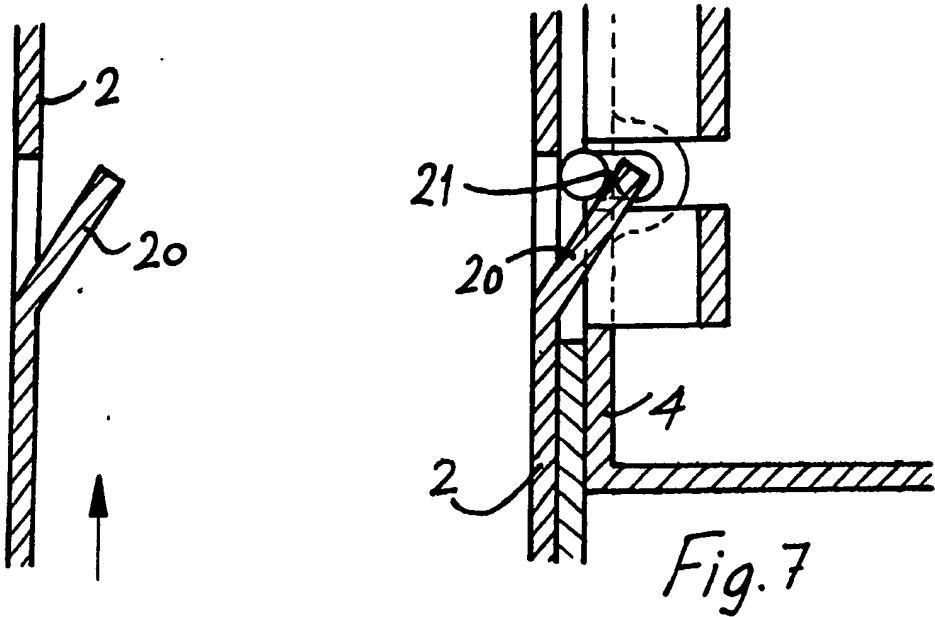


Fig. 7

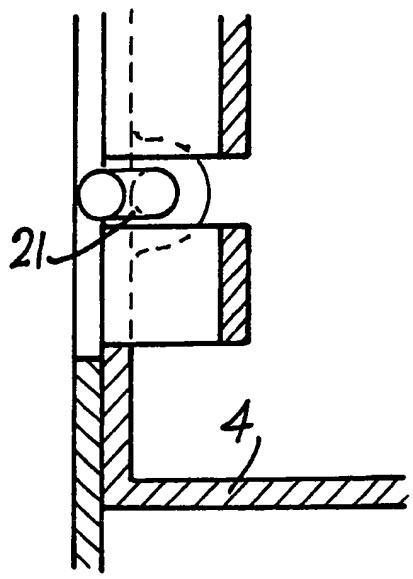


Fig. 8

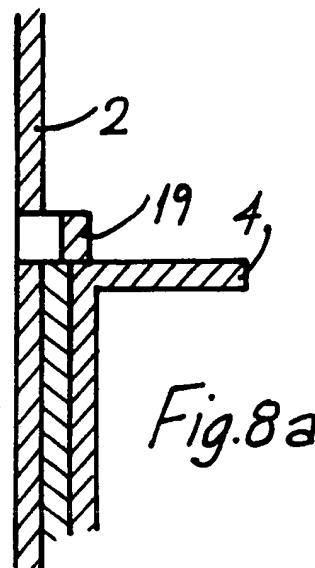


Fig. 8a

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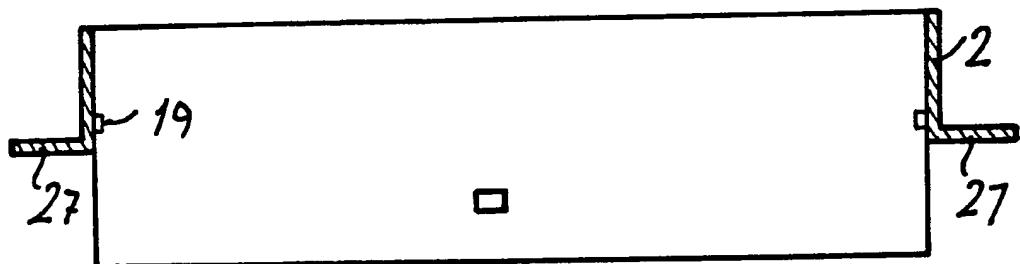
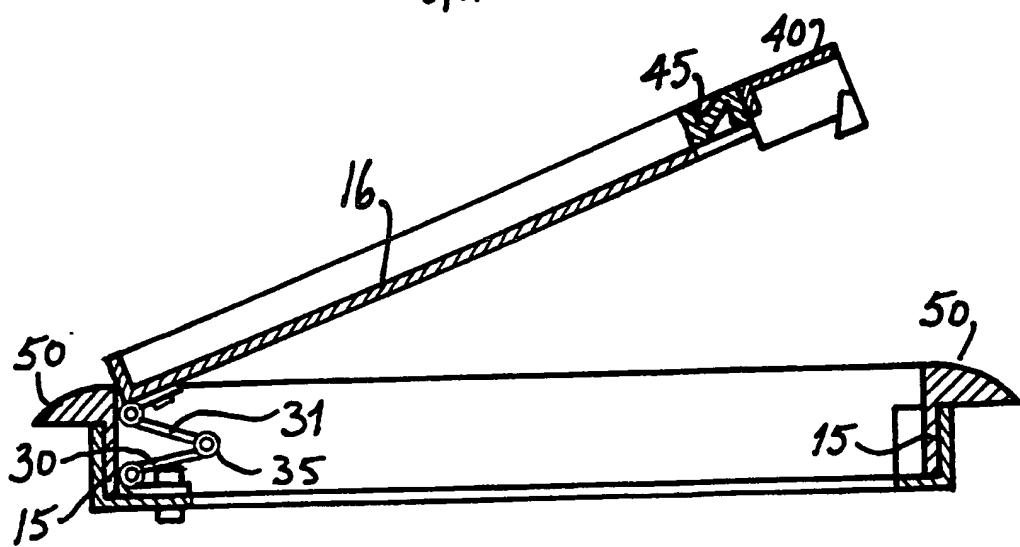


Fig. 9

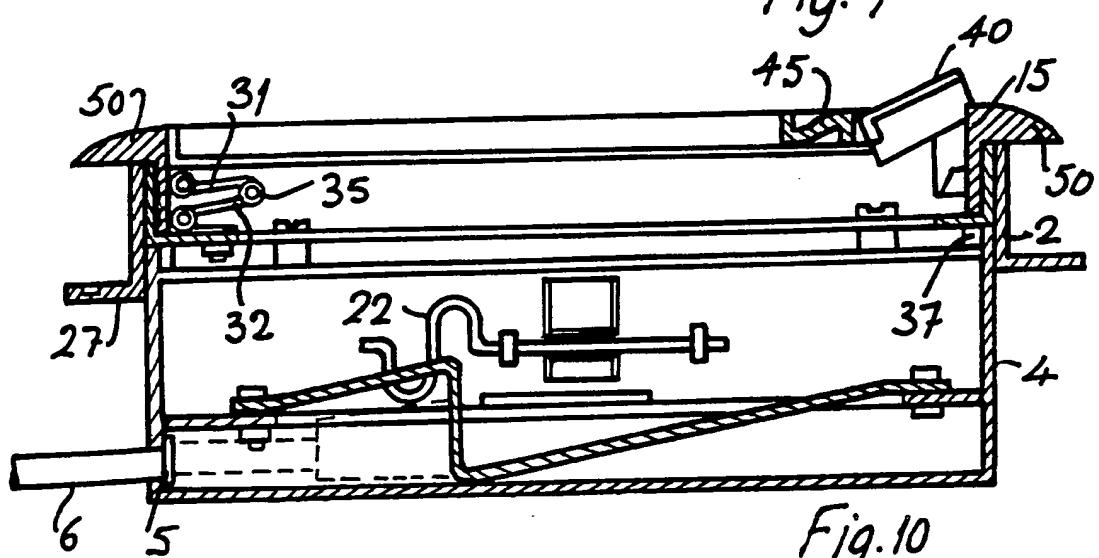


Fig. 10

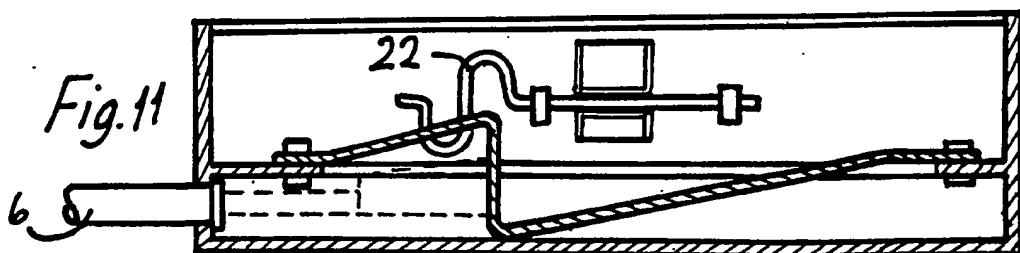
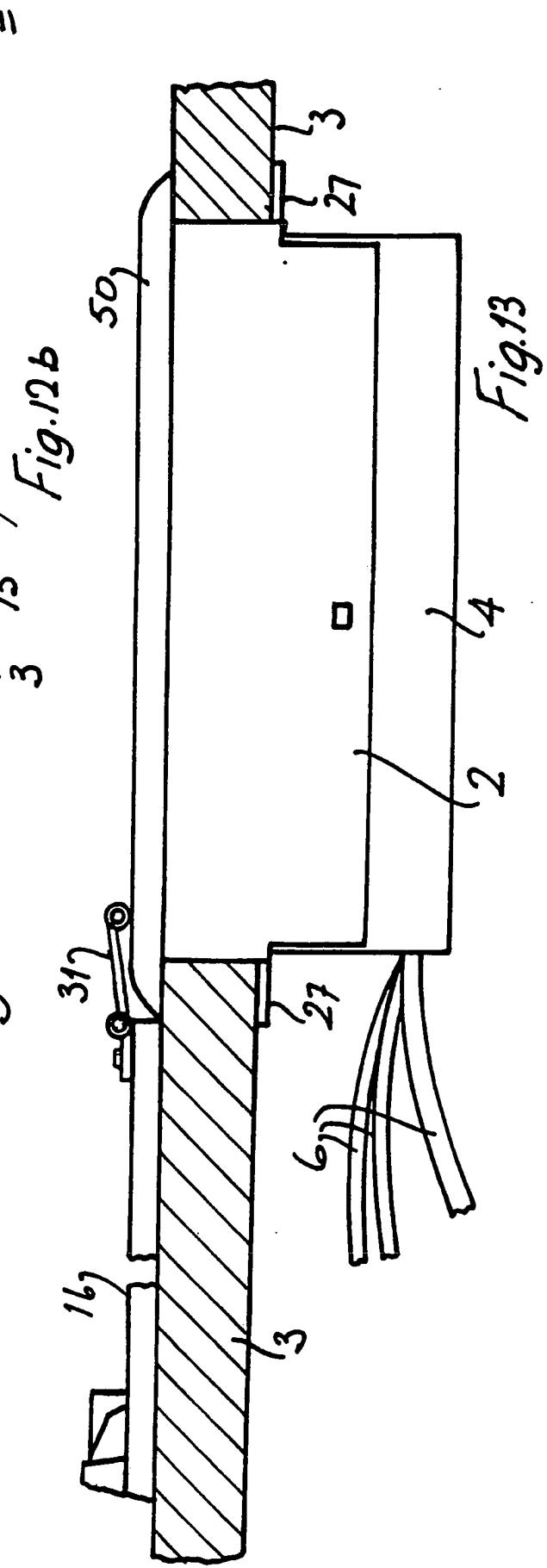
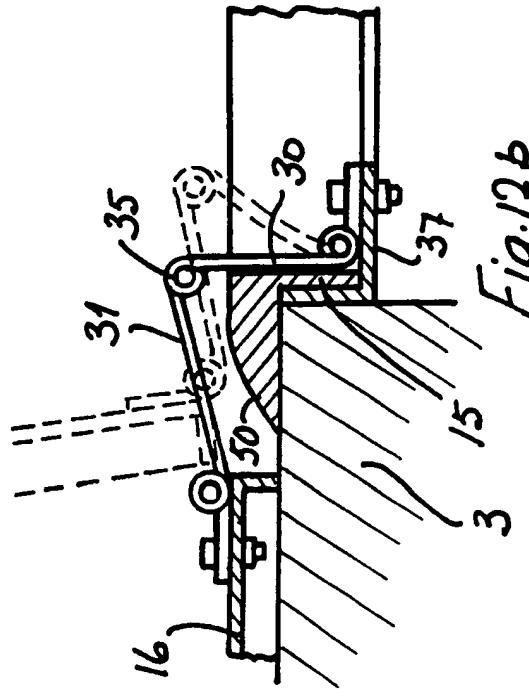
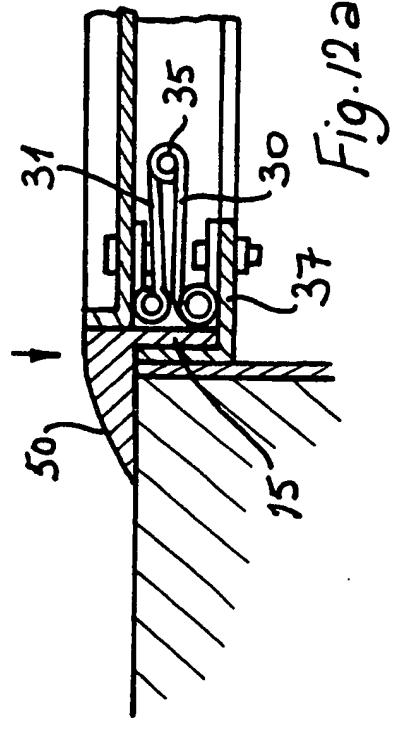


Fig. 11



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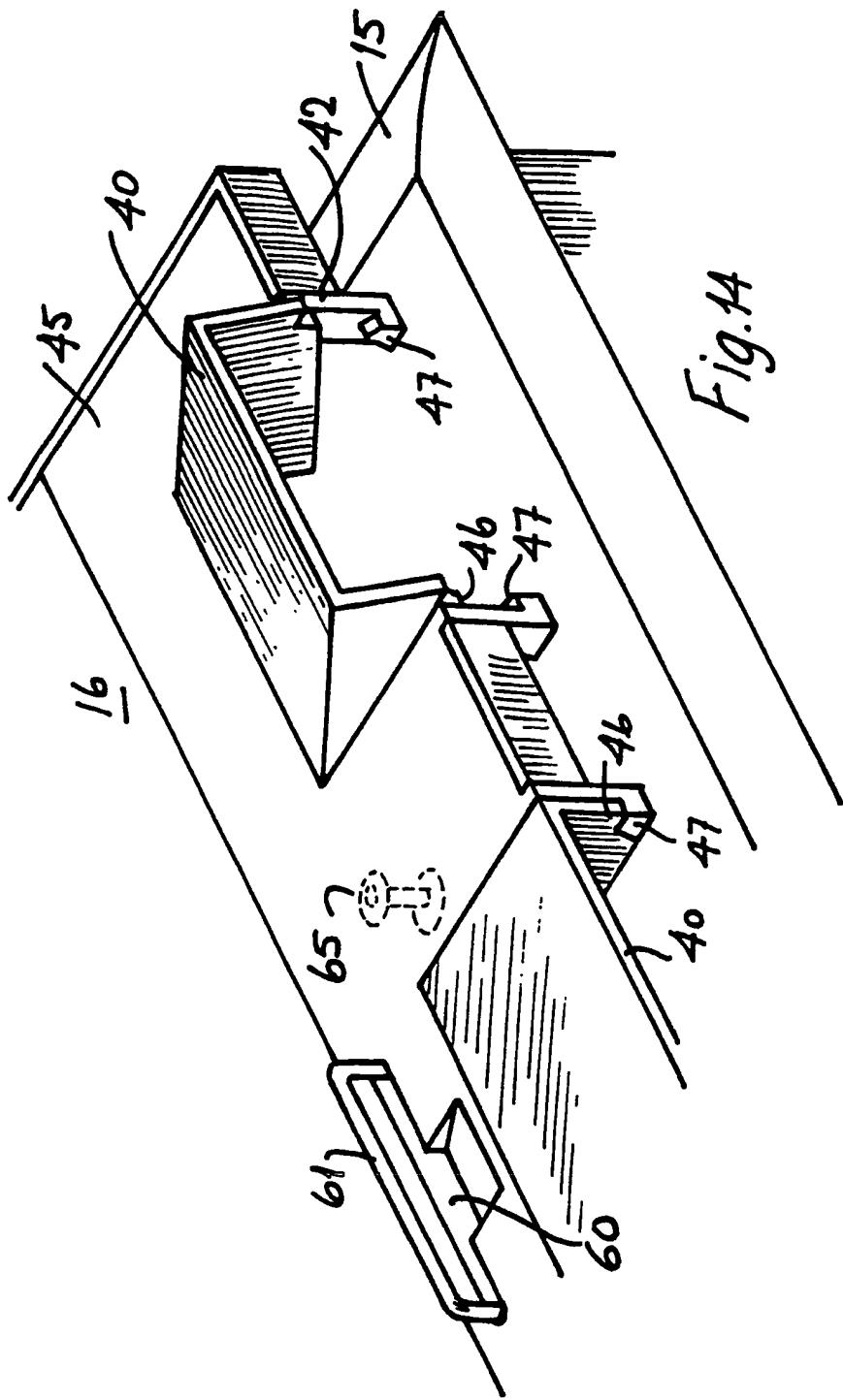
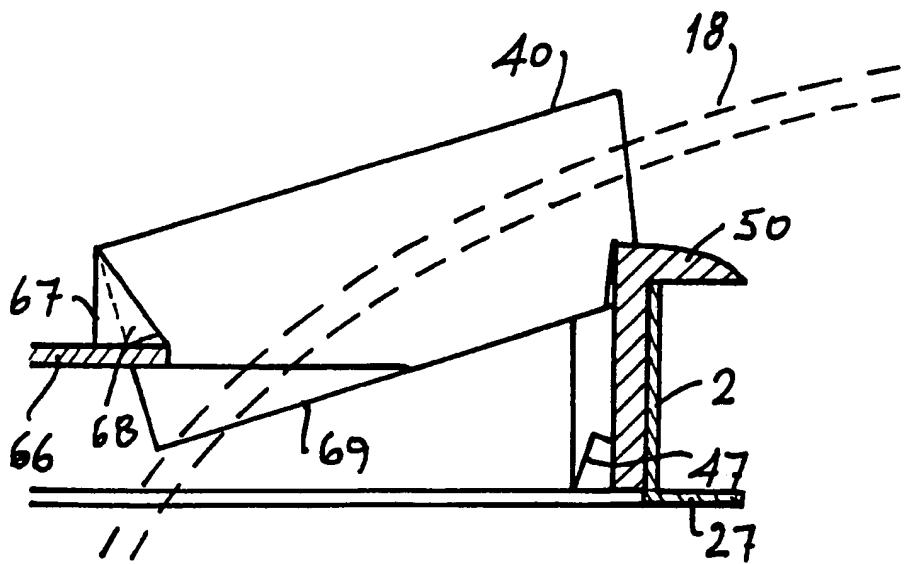
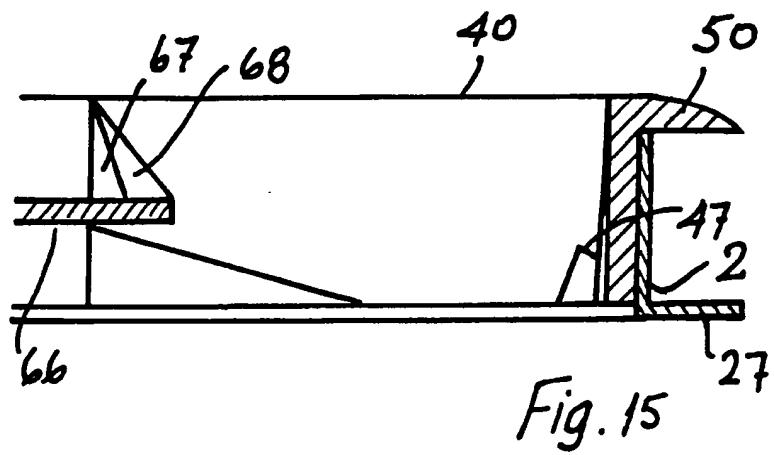


Fig. 14

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A FLOOR BOX

The invention relates to a floor box for telephone sockets, power supply sockets, computer sockets and the like.

According to the invention there is provided a floor box for telephone sockets power supply sockets, computer sockets and
5 the like, the box comprising:

a collar for mounting in an opening;

a lower housing having cable inlets and sockets provided therein; and

an upper door assembly having cable outlets through
10 which outlet cables are led.

In one embodiment of the invention the lower housing is mounted to the collar.

In a preferred embodiment of the invention the lower housing is releasably mounted to the collar.

15 Preferably the lower housing and collar have releasable engagement means for engagement one with the other.

Preferably the releasable engagement means includes spring means for biasing the engagement means into a normally engaged position with the lower housing mounted to the collar.

- 5 Typically the releasable engagement means comprises a male part on one of the collar or housing for releasable engagement with a female part on the other of the collar or housing.

In a particularly preferred arrangement one of the male or female parts comprises a spring means.

- 10 In one arrangement the spring means comprises a rod of spring material which is shaped to define a slot for engagement by a lug, the rod being releasable from the lug for disengagement of the lower housing from the collar.

Preferably the spring is provided on the housing and the lug is provided on the collar.

- 15 In one embodiment of the invention the housing includes access means for releasing the spring from engagement with the lug.

- 20 Preferably the access means comprises a downwardly extending slot through which a tool such as a screwdriver may be inserted to release the spring from the lug and allow the lower housing to be disengaged from the collar.

In another embodiment of the invention the door assembly comprises a door frame and a door hingedly mounted to the door frame by a hinge means.

Preferably the door is movable from a closed position in which
5 it lies substantially flush with the frame to an open position
in which the door is swung substantially 180° out of the frame.

Preferably the hinge means comprises at least two interconnected independently movable hinge parts.

In a particularly preferred embodiment of the invention the
10 hinge means comprises a first hinge part which is hingedly mounted to the frame and a second hinge part which is hingedly mounted to the door, the first and second hinge parts being interconnected by a connecting means.

Preferably the hinge parts are pivotally interconnected for
15 movement of the door out of the door frame and for pivotal movement of the door through substantially 180°.

In one embodiment of the invention, stop means are provided to limit the movement of the door into the frame.

Preferably the door frame is mounted to the lower housing.

In one embodiment the door frame comprises an inner flange for mounting the door frame to the lower housing and for mounting the hinge means to the frame.

- Preferably the door frame includes an outer flange for
5 engagement with a floor covering or the like.

In another embodiment of the invention the cable outlet means comprises cable outlet slot means having a closure member which is pivotally movable relative to the door from an open position in which the outlet cable passes through the slot to
10 a closed position in which the closure member is substantially flush with the door.

In a further arrangement the closure member is pivotally mounted in an outlet cable closure housing mounted to the door.

- 15 Preferably the closure member snap-fittingly engages the closure housing in the closed position.

In one embodiment of the invention there are at least two spaced-apart outlet closure members mounted in the closure member housing.

The invention will be more clearly understood from the following description thereof given by way of example only with reference to the accompanying drawings in which:-

5 Fig. 1 is a perspective view of a floor box according to the invention in a closed position,

Fig. 2 is a perspective view of a floor box of Fig. 1 open,

Fig. 3 is an exploded view of a door frame assembly and collar of the floor box,

10 Fig. 4 is an exploded view of a lower housing of the floor box,

Fig. 5 is a longitudinal cross-sectional view of the floor box,

15 Fig. 6 is a perspective, partially cut-away view of a detail of the floor box

Fig. 7 is a cross-sectional view of the detail of Fig. 6,

Fig. 8 is a sectional view of the detail of Fig. 6, being assembled,

Fig. 8A is a cross-sectional view of an indented stop detail of the box,

Fig. 9 is an exploded cross-sectional view of a door assembly and collar of the box,

5 Fig. 10 is a transverse cross-sectional view of the box,

Fig. 11 is a transverse cross-sectional view of a floor housing of the box,

Figs. 12(a) and 12(b) are cross-sectional view showing the operation of a hinge means,

10 Fig. 13 is a side elevational view showing the operation of the hinge means,

Fig. 14 is a perspective view of a detail of the door assembly of the box,

15 Fig. 15 is a cross-sectional view of a detail of Fig. 14 in one position, and

Fig. 16 is a cross-sectional view of the detail of Fig. 14 in another position.

Referring to the drawings there is illustrated a floor box according to the invention indicated generally by the reference numeral 1. The floor box 1 comprises a collar 2 for mounting in an opening in a floor 3, and a lower housing 4 having knock-out inlets 5 for cables 6 and sockets such as telephone sockets 10, computer sockets 11, power supply sockets 12 and the like. The box is segmented to allow typically at least four separate mounting plates for equipment to be accommodated. The floor box 1 also includes an upper door assembly comprising a door frame 15 and door 16 having cable outlets 17 through which outlet cables 18 connected to the sockets 10, 11, 12 are led. Cables which have already been terminated may be brought into the base by removing gland plates. Cord grips may be provided.

In this case the lower housing 4 is releasably mounted to the collar 2. As will be particularly apparent from Figs. 6 to 8, the lower housing 4 and collar 2 have releasable engagement means for engaging one with the other. The releasable engagement means comprises a male lug part 20 extending inwardly from the collar side wall 4 for releasable engagement with a female part in the form of a slot 21 in the housing part. The slot 21 is defined by a rod 22 of spring material which is self retained in position and is mounted and shaped as indicated in Fig. 6 to define the slot 21 for engagement with the lug 20 for mounting the lower housing 4 to the collar 2 as illustrated particularly in Fig. 6. Indented stops 19

are provided on the collar 2 to limit the upward travel of the lower housing 4 when engaging the lugs 20. Access means for releasing the spring 22 from engagement with the lug 20 is, in this case, provided by a downwardly extending slot 25 in the 5 housing 4 through which a tool such as a screw driver may be inserted to release the spring 22 from engagement with the lug 20 and allow the lower housing 4 to be disengaged from the collar 2. In this case there are two releasable engagement means, one at either end of the lower housing and collar, 10 however, it will be appreciated that a suitable number of engagement means may be employed for mounting the lower housing to the collar.

The collar includes two sidewardly extending flanges 25 for mounting the collar 2 to a floor 3 as illustrated in Fig. 13, 15 the collar being inserted into the opening in the floor from below and being fixed in position by fixing screws inserted through flanges 27 in the collar. When the collar is fixed in position, the lower housing 4 with the cable 6 and sockets 10, 11, 12 in position and wired up is then pushed from below into 20 the collar 2 until the lugs 20 are engaged with the springs 22. If it is desired to remove the housing 4, for example, for access for wiring further sockets or a screw driver or similar tool is inserted into the access slots 25, releasing the springs 22 and allowing the lower housing 4 to be 25 disengaged from the collar 2.

- Referring particularly to Figs. 9 to 13, it will be noted that the door 16 is moved from a closed position in which it lies substantially flush with the frame 15 to an open position in which the door is swung substantially 180° out of the frame 15.
- 5 Hinge means, in this case provided by two-spaced apart hinges are provided between the door 16 and the surrounding frame 15. Each hinge means comprises a first hinge part 30 which is hingedly mounted to the frame 15 and a second hinge part 31 which is hingedly mounted to the door 16. The first and 10 second hinge parts 30, 31 are pivotally interconnected by a hinge pin 35 for pivotal movement of the door out of the door frame 15 and for pivotal movement of the door 16 through substantially 180° as will be particularly apparent from Figs. 12(a) and 12(b). It will be noted that the door frame 15 includes an inwardly extending flange 37 for mounting the 15 first hinge part 30 to the frame 15 and for mounting the door frame 15 to a similar inwardly extending flange 38 provided on the lower housing 4 as will be particularly apparent from Fig. 5.
- 20 The door frame 15 includes an outer flange 50 for engagement with the floor covering or the like. Stop means 55 are provided on the door frame 15 to limit the movement of the door 16 into the frame 15. The outer flange 50 also acts as a stop to limit the opening of the centre points of the 25 hinges. Similarly, the hinge parts are slightly cranked in the region of the centre pin to ensure the hinges are always

tending to close when open, thus preventing unnecessary hinge extension and making closure easy.

Referring particularly to Figs. 9, 10 and 14 to 16, in this case there are three cable outlet slots 17, each having a
5 closure member 40 which is pivotally movable relative to the door 16 from an open position illustrated in Figs. 14 and 16 in which the outlet cables 18 pass through the slots to a closed position in which the closure members 40 are substantially flush with the door as illustrated in Fig. 15.
10 The closure members 40 are pivotally mounted in an outlet cable closure housing 45 which is in turn mounted to the door 16. The closures 40 and closure housing 45 are provided with slots 46 and associated ledges 47 respectively for snap-fittingly engaging the closure members 40 in the closed
15 position.

The housing 45 includes an indent 60 having a recessed handle 61. The indent 60 has a lead-in portion for lifting the handle 61 to the raised position illustrated in Fig. 14.

Each closure flap 40 is held captive between the housing 45
20 and the door 16 when the housing 45 is fixed to the lid by fixing screws 65. The door 16 is of tray formed sheet steel construction having shaped notches cut in the edge opposite the hinged edge. The notches accommodate the housing 45 which is retained in place on the door 16 by means of the fixing

screws 65 which pass through the door 16 and into brass inserts moulded into the plastics closure flap housing 45. The hinging of the closure flap 40 is accomplished by moving pivot points formed at each end of the closure flap 40 and 5 housing 45. A tongue 66 on the door 16 acts as a sliding pivot support surface extending the length of the closure flap 40.

The opening of the closure flap 40 is constrained by housing triangular pivot points 67 at each end of the closure flap 40 10 in complementary triangular sockets 68 in the housing 45. Triangular stops 69 are also provided which engage when the closure flap 40 is opened on the underside of the tongue 66 of the door 16.

Many variations of a specific embodiment of the invention may 15 be readily apparent and accordingly the invention is not limited to the embodiments hereinbefore described which may be varied in both construction and detail.

CLAIMS

1. A floor box for telephone sockets, power supply sockets, computer sockets and the like, the box comprising:

a collar for mounting in an opening;

5 a lower housing having cable inlets and sockets provided therein; and

an upper door assembly having cable outlets through which outlet cables are led.

10 2. A floor box as claimed in claim 1 wherein the lower housing is mounted to the collar.

3. A floor box as claimed in claim 2 wherein the lower housing is releasably mounted to the collar.

15 4. A floor box as claimed in claim 3 wherein the lower housing and collar have releasable engagement means for engagement one with the other.

5. A floor box as claimed in claim 4 wherein the releasable engagement means includes spring means for biasing the

engagement means into a normally engaged position with the lower housing mounted to the collar.

6. A floor box as claimed in claim 4 or 5 wherein the releasable engagement means comprises a male part on one of the collar or housing for releasable engagement with a female part on the other of the collar or housing.
5
7. A floor box as claimed in claim 6 herein one of the male or female parts comprises a spring means.
8. A floor box as claimed in claim 7 wherein the spring means comprises a rod of spring material which is shaped to define a slot for engagement by a lug, the rod being releasable from the lug for disengagement of the lower housing from the collar.
10
9. A floor box as claimed in claim 8 wherein the spring is provided on the housing and the lug is provided on the collar.
15
10. A floor box as claimed in claim 9 wherein the housing includes access means for releasing the spring from engagement with the lug.
- 20 11. A floor box as claimed in claim 10 wherein the access means comprises a downwardly extending slot through which

a tool such as a screwdriver may be inserted to release the spring from the lug and allow the lower housing to be disengaged from the collar.

12. A floor box as claimed in any preceding claim wherein the door assembly comprises a door frame and a door hingedly mounted to the door frame by a hinge means.
5
13. A floor box as claimed in claim 12 wherein the door is movable from a closed position in which it lies substantially flush with the frame to an open position
10 in which the door is swung substantially 180° out of the frame.
14. A floor box as claimed in claim 13 wherein the hinge means comprises at least two interconnected independently movable hinge parts.
15. A floor box as claimed in claim 14 wherein the hinge means comprises a first hinge part which is hingedly mounted to the frame and a second hinge part which is hingedly mounted to the door, the first and second hinge parts being interconnected by a connecting means.
15
16. A floor box as claimed in claim 15 wherein the hinge parts are pivotally interconnected for movement of the
20

door out of the door frame and for pivotal movement of the door through substantially 180°.

17. A floor box as claimed in any of claims 12 to 16 wherein stop means are provided to limit the movement of the door into the frame.
5
18. A floor box as claimed in any of claims 12 to 17 wherein the door frame is mounted to the lower housing.
19. A floor box as claimed in claim 18 wherein the door frame comprises an inner flange for mounting the door frame to the lower housing and for mounting the hinge means to the frame.
10
20. A floor box as claimed in any of claims 12 to 19 wherein the door frame includes an outer flange for engagement with a floor covering or the like.
- 15 21. A floor box as claimed in any preceding claim wherein the cable outlet means comprises cable outlet slot means having a closure member which is pivotally movable relative to the door from an open position in which the outlet cable passes through the slot to a closed position in which the closure member is substantially flush with the door.
20

22. A floor box as claimed in claim 21 wherein the closure member is pivotally mounted in an outlet cable closure housing mounted to the door.
- 5 23. A floor box as claimed in claim 22 wherein the closure member snap-fittingly engages the closure housing in the closed position.
24. A floor box as claimed in claim 22 or 23 wherein there are at least two spaced-apart outlet closure members mounted in the closure member housing.
- 10 25. A floor box substantially as hereinbefore described with reference to the accompanying drawings.

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